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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,557

09/30/2003

Terry L. Schneider

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HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

EXAMINER

CROUSE, BRETT ALAN

ART UNIT

PAPER NUMBER

1774

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/675,557	<b>Applicant(s)</b> SCHNEIDER, TERRY L.	
	<b>Examiner</b> Brett A. Crouse	<b>Art Unit</b> 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

This office action is in response to applicant's amendment, filed 23 April 2007, which amends claims 14 and 22. Claims 1-29 are pending.

#### ***Response to Amendment***

Applicant's amendment, 23 April 2007, with respect to the rejection of claims 1, 2, 5, 6, 9, 11, 14, 15, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by (Terasaka, US 5,770,305), overcomes the rejection of claims 14, 15 and 21. The rejection of claims 1, 2, 5, 6, 9, 11, is maintained for the reasons as set forth below.

Applicant's amendment, 23 April 2007, with respect to the rejection of claims 1-29 under 35 U.S.C. 103(a), as being unpatentable over (Terasaka, US 5,770,305), fails to overcome the reference of record. The rejection of claims 1-29 is maintained for the reasons as set forth below.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by (Terasaka, US 5,770,305) hereinafter known as Terasaka.

As to claims 1, 2, 6, and 9:

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Column 2, line 65 through column 3, line 9 with reference to figure 4, teach an anisotropic conductive film formed of an epoxy resin and contributing to adhesion.

Conductive particles dispersed in the resin can be Titanium – Nickel alloy.

The incorporation of shape memory particles in the resin of Terasaka is held to inherently improve an impact resistance of the resinous base material.

As to claim 5:

Column 2, line 65 through column 3, line 9 with reference to figure 4, further teaches that the alloy expands or contracts in response to stress and the alloy particles can be crushed due to stress. The various shaped encompassed by the base particles and stress induced deformations is held to encompass spheres, ovals, and cylinders.

As to claim 11:

Column 3, lines 17-18, teach that the particles have a mean particle size of 8 $\mu$ m.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Terasaka, US 5,770,305) hereinafter known as Terasaka, as applied to claims 1, 2, 5, 6, 9 and 11 above, as evidenced by <http://herkules.oulu.fi/isbn9514252217/html/x317.html>, Fundamental characteristics of nickel-titanium shape memory alloy, Oulun Yliopisto.

The teachings of Terasaka as in the rejection above are relied upon.

As to claims 14, 15, and 21:

The recitation of intended use of the SMA particles in the adhesive film is given little patentable weight. The disclosure of Titanium – Nickel alloy particles in an epoxy resin film is held to be functionally equivalent. The limitation granules is held to be encompassed within the particle size distribution disclosure of a mean particle size of 8µm.

In the absence of factual evidence to the contrary one of ordinary skill in the art would reasonably presume that a resin comprising a shape memory alloy would be expected to exhibit an improvement in compression-after-impact performance.

Terasaka does not teach the resin composition in the form of a paste. It would have been obvious to one of ordinary skill in the art at the time of invention to formulate the resin viscosity for ease of application.

Terasaka further does not teach an austenitic or martensitic crystal structure of the alloy. It is noted that a nickel-titanium alloy is inherently either in an austenitic or martensitic crystal structure dependent on temperature and the relative percentages of the constituent metals, as evidenced by Fundamental characteristics of nickel-titanium shape memory alloy, and it is therefore obvious that it will exist in the film as either austenitic or martensitic. Terasaka further does recite a volume percent for amount of alloy within the resinous material. Column 3, lines 33-38 with reference to figure 5 teaches that the alloy content of the resin is 3 weight percent. The density of nickel-titanium alloy is about  $6.5 \text{ g/cm}^3$  and the density of for example, phenolic resin is about  $1.25 \text{ g/cm}^3$ . This results in a volume percentage of about 0.58 percent. This teaching is held to suggest about 1 volume percent as required by claims 7, 8, 18, 19, and 28, which could be easily optimized by one of ordinary skill in the art.

### ***Response to Arguments***

With respect to the rejection of claims 1-29 under 35 U.S.C. 103(a), applicant argues that applicant argues that Terasaka teaches the NiTi alloy particles in a martensitic (compressed) state

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and that to provide compression-after-impact strength the particles need to be in the austenitic (uncompressed) state. The examiner agrees that Terasaka teaches the particles in a compressed state. However, applicant's argument is of narrower scope than the breadth of the scope of the claims under examination. The independent claims do not require that the particles are uncompressed versus compressed.

The scope of the presently rejected claims encompasses the composition of Terasaka. For example, independent claims 1, 14 and 22 are not limited to austenitic (uncompressed) particles within the coating. Claim 3, which is dependent from claim 1, claims 17, which is dependent from claim 14 and claim 25, which is dependent from claim 22 are directed to particles in the martensitic state. Additionally, if the particles are in a compressed state and are applying a force normal to the surface of the resin, it is unclear as to why this force would not act in opposition to an externally applied stress, such as by an impact event. Thus, it is not clear that the shape memory alloy particles of Terasaka do not in fact result in the claimed critical properties, as the claims only require a shape memory alloy to obtain said properties. Further, there exists no clear nexus in the claims between the state of the particles and compression-after-impact strength. In the absence of factual evidence to the contrary one of ordinary skill in the art would reasonably presume that a resin comprising a shape memory alloy would be expected to exhibit the claimed critical property.

The secondary reference associated with the Terasaka rejection is used solely as an evidential reference.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on

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obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is 571-272-6494. The examiner can normally be reached on Monday - Friday 6:00AM - 2:30PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BAC, 22 July 2007

  
JILL GRAY  
PRIMARY EXAMINER